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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,413	09/13/2004	Masayuki Nate	121108	6891
25944	7590	01/10/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EWALD, MARIA VERONICA	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/507,413

Applicant(s)

NATE ET AL.

Examiner

Maria Veronica D. Ewald

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/13/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

13. Figures 2 and 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7, 11 – 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuda, et al. (U.S. 4,802,840). Fukuda, et al. teach a die for forming a honeycomb body, the die comprising a plate having a predetermined size and provided with a plurality of cell blocks on a front face thereof, the cell blocks being basically defined by four slits (item 2 – figure 2; column 3, lines 25 – 30); and a plurality of back holes on a

Art Unit: 1722

back face of the die, each back hole being communicatively connected with a cross point of a predetermined slit (item 5 – figure 4; column 3, lines 30 – 32), wherein a plurality of cell blocks are disposed per one side of the die (figure 2; column 3, lines 25 – 30). Furthermore, Fukuda, et al. teach that the predetermined slits are disposed at every one position of holes (figure 4) and the thickness of the die is 15 – 30 mm (column 6, lines 27 – 34).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda, et al. in view of Suzuki (U.S. 6,193,497). Fukuda, et al. teach the characteristics previously described but do not teach that the radius of curvature of the four corners of the die is between 0.5 to 1.5 mm.

In a method to form an extrusion die for a honeycomb structural body, Suzuki teaches a die comprised of a plurality of intersecting slits arranged on the front surface of a die, forming cell blocks and a plurality of raw material feeding holes arranged on the back surface of the die (column 3, lines 8 – 14). Suzuki also displays the results of several tests in which the radius of curvature of the round portion of the die is varied between 0 – 160  $\mu$ m or 0 – 16 mm. From the tests performed, Suzuki concluded that

Art Unit: 1722

the target properties of compression strength, isostatic strength, thermal shock resistance, and transformation amount were optimized when the radius of curvature was between 15 – 80  $\mu\text{m}$  or 1.5 – 8.0 mm (figure 3; column 6, lines 43 – 48). This reads on the Applicant's claim that the radius of curvature of the four corners of the die be 0.5 to 1.5 mm.

It would have been obvious at the time of the Applicant's invention to modify the die structure of Fukuda, et al. such that the radius of curvature is 0.5 to 1.5 mm to optimize target properties of the formed honeycomb structural body as taught by Suzuki.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda, et al. in view of Masaaki, et al. (JP 2000-326318). Fukuda, et al. teach the characteristics previously described but do not teach that the die is made of cemented carbide formed by compacting and sintering.

In a method to manufacture a die for a honeycomb structure, Masaaki, et al. teach a process whereby the die is formed from cemented carbide sintered with the addition of metals, being of iron, cobalt and nickel added 3 to 30 %, at least (paragraphs 0035 – 0037; page 5 of 11). This manufacturing process and selection of materials ensures a junction strength (where two or three metal surfaces are joined to make the die) and toughness (paragraphs 0009, 0038; pages 2 and 5 of 11). This reads on the Applicant's claims that the die is made of cemented carbide and wherein the cemented carbide is formed by compacting, followed by sintering at high temperature, metal

Art Unit: 1722

carbide powder of transition metal element series with an iron group metal binder having toughness.

It would have been obvious at the time of the Applicant's invention to manufacture the die structure of Fukuda, et al. from cemented carbide followed by sintering and the addition of iron, cobalt or nickel for the purpose of ensuring that the die structure has adequate junction strength and toughness as taught by Masaaki, et al.

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MVE

  
ROBERT DAVIS  
PRIMARY EXAMINER  
GROUP 1300 1700

1/9/06